

## APPLICATION FOR CYCLE 6 HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)

### APPLICATION SUMMARY

This summary page is filled out automatically once the application is completed.

*After the application is finalized, please save this PDF form using the exact "Application ID" (shown below) as the file name.*

**Important:** Review and follow [the Application Instructions](#) step-by-step as you complete the application. Completing an application without referencing to the instructions will result in an incomplete application or an application with fatal flaws that will be excluded from the ranking and selection process.

**Application ID:** 02-Trinity County-3

**Submitted By (Agency):**  
Trinity County

**Caltrans District**

02

**Application Number**

3

**Out of**

3

### Project Location

Various locations throughout Trinity County, a systemic application

### Project Description

Install curve advance warning signs and chevron signs to reduce instances of vehicles leaving the road

**Countermeasure 1:** R27: Install chevron signs on horizontal curves

**Countermeasure 2:** R28: Install curve advance warning signs

**Countermeasure 3:**

**Total Expected Benefit**

26,824,245

**Total Project Cost**

\$813,282.00

**B/C Ratio:**

**32.98**

**I. Basic Project Information**

Date  Caltrans District  MPO

Agency  County

Total number of applications being submitted by your agency

Application Number (each application must have a unique number)

**Contact Person Information**

Name (Last, First):

Position/Title of Contact Person

Email:  Telephone:  Extension:

Address:

City:  Zip Code:  (Enter only a 5-digit number.)

**Project Information**

Project Location  
-Be Brief (limited to 250 characters)  
[-See Instructions](#)

Project Description  
-Be Brief (limited to 250 characters)  
[-See Instructions](#)

Functional Classification  (For Functional Classification and CRS Maps, Visit [http://www.dot.ca.gov/hq/tsip/hseb/crs\\_maps/](http://www.dot.ca.gov/hq/tsip/hseb/crs_maps/))

CRS Map ID (e.g. 08E14)

Urban/Rural Area  (Visit <http://earth.dot.ca.gov/>)

High-Risk-Rural-Roads (HR3) Eligibility

If this project is not HR3 eligible, what is the approximate total cost percentage that is HR3 eligible?  %

**Work on the State Highway System**

Does the project include improvements on the State Highway System?

If no, move on to the next page; if yes, go to the below question.

Is this a joint-funded project with Caltrans?

- If yes, check this box to confirm a formal Letter of Support from Caltrans - District Traffic is attached to the application. The letter should include estimates of cost sharing.
- If no, check this box to confirm a written correspondence from Caltrans District Traffic is attached to the application. The correspondence should indicate that Caltrans does not see issues that would prevent the proposed project from receiving an encroachment permit

**Non-Infrastructure (NI) Elements**

Does the project include NI Elements?

If yes, NI Activity Worksheet and NI Cost Estimate are required attachments. For more information on the requirements and guidance for NI elements of HSIP applications, see the [HSIP NI webpage](#).

What are the primary type(s) of non-infrastructure included? (Check all that apply. Skip if project does not include NI Elements.)

- Bicycle and pedestrian safety education (K-12 students)
- Bicycle and pedestrian safety education (adults)
- Other safety education (please describe below)
- Enforcement (school zones)
- Other Enforcement (please describe below)



Emergency Medical System

**Additional Information**

1. Is the project focused primarily on "spot location(s)" or "systemic" improvements?

The primary type of the "systemic" improvements:

2. Which of the California's Strategic Highway Safety Plan (SHSP) Challenge Areas does the project address primarily?  
(For more information on the SHSP and its Challenge Areas, see: <http://www.dot.ca.gov/SHSP/> )

3. How were the safety needs and potential countermeasures for this project **first** identified?

4. What is the primarily mode of travel intended to be benefited by this project?

5. Approximate percentage of project cost going to improvements related to **motorized** travel  %

6. Approximate percentage of project cost going to improvements related to **non-motorized** travel  %

7. Is the project focused primarily on "Intersection" or "Roadway" improvement?

Miles of Roadway

8. Posted Speed Limit (mph)

| 9. Average Daily Traffic           | ADT (Major Road)                   | ADT (Minor Road)                | Year Collected                    |
|------------------------------------|------------------------------------|---------------------------------|-----------------------------------|
| <a href="#">(See Instructions)</a> | <input type="text" value="2,560"/> | <input type="text" value="73"/> | <input type="text" value="2010"/> |

## II. Narrative Questions [\(See Instructions\)](#)

**These narrative questions are intended to provide additional project details for the application reviewers and project files. Application reviewers will use the information in their “fatal flaw” assessment of the applications, including:**

- 1) The project scope is eligible for HSIP and/or HR3 funding;
- 2) The countermeasures used in the B/C ratio calculation are appropriately applied based on the scope of the project;
- 3) The crash data used in the B/C ratio calculation is appropriately applied based on the scope of the project and countermeasures used;
- 4) The costs included in the application represent the likely total project cost necessary to fully construct the proposed scope. If the proposed project is a piece of a larger construction project, the entire scope of the larger project must be identified and included in the B/C ratio calculation;
- 5) The application data and attachments are reasonable and meet generally accepted traffic engineering and transportation safety principles.

**If significant inconsistencies or errors are found in the application information, the Caltrans reviewers may conclude that the application includes one or more “fatal flaws” and the application will be dropped from further funding considerations. The applicant will not be notified of Caltrans findings until after the selection process is complete.**

### 1. Overall Identification of Need

Describe how the agency identified the project as one of its top safety priorities. Was a data-driven, safety evaluation of their entire roadway network completed? Do the proposed project locations represent some of the agency's highest crash concentrations? (limited to 5,000 characters)

An analysis of ten years of data using the Crossroads Collision Database revealed a pattern of run-off-road collisions throughout the county - out of roughly 500 collisions stored within the database, over 300 are run-off-road collisions. Analysis of fatal and severe collisions only revealed that about 2/3 of fatal and about half of severe collisions occur in the dark with no street lights.

A qualitative analysis of collision locations using Google Earth showed a pattern of vehicles leaving the roadway at or shortly after curves - none of these curves had chevron signs, and 2/3 of these locations had no warning signs. A single curve had guard rail.

These patterns suggest that a systemic approach is appropriate to reduce the occurrence of future incidents.

### 2. Potential for Proposed Improvements to Correct the Problem

Describe the primary causes of the collisions that have occurred within the project limits. Are there patterns in the crash types? Clearly demonstrate the connection between the problem and the proposed countermeasures utilized in the Benefit/Cost Ratio calculations. Depending on the nature of the project, explain why the agency choose to pursue "Spot location(s)" or "Systemic" improvements. If the proposed project include Non-Infrastructure (NI) elements, also describe how the NI elements will complement in improving the safety within the project limits. (limited to 5,000 characters)

**Note:** Safety improvements that do not have countermeasures and crash reduction factors identified in the TMS B/C Calculator can be included in the project scope; they just won't be added to the project's B/C ratio shown in the application.

The collisions occurring within the project limits are run-off-road collisions, more than half of which are in the dark with no street lights, with the same number hitting an object after leaving the roadway. About 40 percent of the victims experience an overturn after leaving the road.

By placing curve warning signs ahead of the curves and chevron signs along the length of the curve, drivers will be more aware not only of the presence of the curves, but of their severity. With this improved awareness, fewer drivers will leave the roadway.

A systemic approach was chosen instead of a spot approach because few collisions occur on any given road, but throughout the county there has been a pattern of vehicles leaving the road around or while recovering from a curve.

### 3. Crash Data Evaluation

Explain how the influence areas for each separate countermeasure were established. Describe how the limits of the crash data were established for each countermeasure to ensure only appropriate crashes were included in the Collision Summary Report(s), Collision Diagram(s) and B/C calculations. (limited to 5,000 characters)

The area of influence for installing chevrons around curves was the individual curves, plus a distance around the curves based on the severity of the curve.

The area of influence for the installation of curve warning signs was the same, but only occurring on curves that could benefit from warning signs. About 1/3 of the chosen curves had warning signs already present, so those were excluded from this countermeasure.

### 4. Prior attempts to address the Safety Issue

If appropriate, list all other projects/countermeasures that have been (or are being) deployed at this location. Applicants must identify all prior federal HSIP, HR3 or Safe Routes To School (SRTS) funds approved within or directly adjacent to the propose projects limits within the last 10 years. (limited to 5,000 characters)

**Note:** HSIP funding cannot be used to construct the same general type of countermeasures within the same limits within 10 years to ensure agencies do not apply the same Crash Reduction Factors to the same crashes.

HSIP project no. HSIPL-5905(078) was completed at Post Mile 3.4 on Ruth Zenia Road. This project consisted of a guardrail installation, but this application is systemic while the previous project was site-specific.

HSIP project no. HSIPL-5905(088) was completed at Post Mile 8.0 on Trinity Dam Blvd. This project consisted of a guardrail installation, and none of the collisions being considered are within the influence of the guardrail.

### 5. Total project costs

Describe the process used to establish the total cost for the project. Confirm contingencies for reasonably expected costs, including drainage, environmental, traffic, etc, are included. For a large project where the HSIP funding is only a small portion of the overall project scope and costs, the total project cost must still be included in the application and its B/C ratio calculation. (limited to 5,000 characters)

The cost of signs and installation was determined based on information from the CalTrans Office Engineer Cost Data page. Data for single-post signs and their installation was taken from Districts 1 and 2 for each year it was available in the eight years of data. The total number of signs and installations was then divided by the total cost of these signs and installations to produce the expected average price of each. The distribution of costs between the countermeasures was done based on the proportion of signes needed for each countermeasure.

The cost of traffic control was calculated based on the cost to hire three flaggers and rent a flatbed truck. The number of hours was determined based on a contractor's ability to install a sign in about 15 minutes. Mobilization is assumed to be 10 percent of the sum of all other construction costs.

The cost of PE is assumed to be 25 percent of the construction cost, while the cost of Construction Engineering is assumed to be 15 percent of the construction cost. The cost of right-of-way is assumed to be \$20,000 per acre.

A 20 percent contingency is added to reflect uncertainties in quantities and price, as CON isn't expected to begin until 2018.

### III. Project Cost Estimate (See Instructions)

**All project costs must be accounted for on this form, even if substantial elements of the overall project are to be funded by other sources.**

Do not enter in shaded fields (calculated - read only). Round all costs up to the nearest hundred dollars. Once all costs and the desired HSIP/Total ratios are entered, click "Check Cost Estimate" to perform validation. If errors are detected, they will appear below the button. **Click it to check again each time when the costs have been revised.**

| Phase   | Total Cost                           | HSIP/Total (%) | HSIP Funds       | Local/Other Funds |
|---|--------------------------------------|----------------|------------------|-------------------|
| <b>Preliminary Engineering</b>  | Environmental                        | 90 (%)         | \$50,300         | \$5,600           |
|   | PS&E                                 | 90 (%)         | \$50,300         | \$5,600           |
|   | <b>PE Subtotal</b>                   |                | <b>\$100,600</b> | <b>\$11,200</b>   |
| <input type="checkbox"/> Agency does NOT request HSIP funds for PE Phase (automatically checked if PE - HSIP funds is \$0). |                                      |                |                  |                   |
| <b>Right of Way</b>   | Right of Way Engineering             | 90 (%)         | \$0              | \$0               |
|   | Appraisals, Acquisitions & Utilities | 21 (%)         | \$39,200         | \$147,800         |
|   | <b>ROW Subtotal</b>                  |                | <b>\$39,200</b>  | <b>\$147,800</b>  |
| <b>Construction Engineering &amp; Construction</b>  | Construction Engineering             | 90 (%)         | \$60,300         | \$6,800           |
|   | Construction                         | 90 (%)         | \$402,600        | \$44,800          |
|   | <b>CON Subtotal</b>                  |                | <b>\$462,900</b> | <b>\$51,600</b>   |
| <b>Non - Infrastructure (NI)</b>  | NI Elements                          | 90 (%)         | \$0              | \$0               |
| <b>Total Cost</b>   |                                      | <b>74 (%)</b>  | <b>\$602,700</b> | <b>\$210,600</b>  |

Click to Check Cost Estimate ( See Notes in Instructions )

No errors have been found in the cost estimate.

### IV. Implementation Schedule [\(See Instructions\)](#)

The local agency is expected to deliver the project per Caltrans Local Assistance [safety program delivery requirements](#). In order for the milestones to be calculated correctly, all fields needs to be filled in. For steps that are not applicable, enter "0".

**Target Date for the Project's Amendment into the FTIP:** 01/01/2014

Time for agency to internally staff project and request PE authorization 3 Month(s)

Typical Time for Caltrans and FHWA to process and approve PE authorization 2 Month(s)

**Proposed PE Authorization Date:** 06/02/2014 **(PE Authorization Delivery Milestone)**

Will external consultants be required to complete the PE phase of this project? Yes

Additional time needed to the Delivery Process for hiring PE consultant(s) 6 Month(s) (0 - 6)

Time to prepare environmental studies request 2 Month(s)

Time to complete CEQA/NEPA studies/approvals 12 Month(s)

*See PES Form in the LAPM for Typical studies and permits*

Time to complete the Right of Way Acquisition (federal process) 18 Month(s)

*Plan on 18 months minimum for federal process including a condemnation*

Time to complete final PS&E documentation 3 Month(s)

Other 0 Month(s)

**Expected Completion Date for the PE Phase:** 10/31/2017

Time for agency to request CON authorization 3 Month(s)

Typical Time for Caltrans and FHWA to process and approve CON Auth 3 Month(s)

**Proposed CON Authorization Date:** 05/01/2018 **(CON Authorization Delivery Milestone)**

Time included for the agency's workload-leveling or construction-window needs 0 Month(s)

Time to award contract with CON contractor (following the federal process, including Board/Council approval, advertise, award, execute and mobilize) 3 Month(s)

Time to complete construction 1 Month(s)

Time included for closing the CON contract 2 Month(s)

Other 0 Month(s)

**Expected Completion Date for the CON Phase:** 10/30/2018

Time to complete the project close-out process 3 Month(s)

Typical Time for Caltrans and FHWA to process and approve project close-out 3 Month(s)

**Expected Completion Date for the project Close-Out:** 04/30/2019 **(Close-Out Delivery Milestone)**



### V. Countermeasures, Crash Data and Benefit/Cost Ratio [\(See Instructions\)](#)

In the process of completing this application, the Local Agency is required to utilize the Benefit/Cost Ratio Calculation Tool that is included in the Safe Transportation research and Education Center (SafeTREC) Transportation Injury Mapping System (TIMS) web site. This **web site** can be assessed at <http://tims.berkeley.edu/>

The final output summary page from TIMS must be included as part of the official application (both electronically and hard copy). The hard copy page must be included in the application as one of the attachments.

In order to facilitate the electronic collection and tracking of this data, Caltrans is requiring agencies to manually enter some of the key "input data" and "output data" used in their final TIMS B/C Ratio. *NOTE: If any of the values inputted on this sheet do not match the values from the TIMS B/C Ratio Output Summary sheet, THE APPLICATION WILL BE REJECTED. **Be Careful and confirm the numbers!***

**TIMS Application ID:**  (This ID is generated by this form. TIMS Application ID must match this ID.)

**Version (from TIMS) :**  **Crash Data Period:** from  to

**Total Project Cost:**  (This must match the total project cost in Section III.)

#### Countermeasure Information

Number of countermeasures utilized:

##### Countermeasure

- #1:
- #2:
- #3:

#### B/C Ratio Calculation

|                                  | Expected Benefit (Life)                   | Expected Cost                          | Resulting B/C                      |
|----------------------------------|---|--|------------------------------------|
| Countermeasure #1                | <input type="text" value="\$21,057,120"/> | <input type="text" value="\$641,603"/> | <input type="text" value="32.82"/> |
| Countermeasure #2                | <input type="text" value="\$5,767,125"/>  | <input type="text" value="\$171,679"/> | <input type="text" value="33.59"/> |
| Countermeasure #3                | <input type="text" value="\$0"/>          | <input type="text" value="\$0"/>       | <input type="text" value="0.00"/>  |
| <b>Project's Total (Overall)</b> | <input type="text" value="\$26,824,245"/> | <input type="text" value="\$813,282"/> | <input type="text" value="32.98"/> |

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## VI. Application Attachments [\(See Instructions\)](#)

Check all attachments included in this application.

- Vicinity map /Location map (Required)
- Project map showing existing and proposed conditions (Required)
- Pictures of Existing Condition (Required)
- Collision diagram(s) (Required)
- Collision summary report / list (Required)
- TIMS B/C output summary sheet (Required)
- Detailed Engineer's Estimate (Required)
- Warrant studies (Required when applicable)
- Letter of Support from Caltrans (Required when applicable)
- Non-Infrastructure (NI) Activity Worksheet and NI Cost Estimate (Required when applicable)
- Additional narration, documentation, letters of support, etc. (optional)

## VII. Application Data Verification and Signature [\(See Instructions\)](#)

### Part A. Engineer's Signature and Stamp

Chapter 7; Article 3; Section 6735 of the Professional Engineer's Act of the State of California requires engineering calculation(s) or report(s) be either prepared by or under the responsible charge of a licensed civil engineer. Since this HSIP application defines the scope of work of a future construction project and requires complex engineering principles and calculations which are based on the best data available at the time of the application, the application must be signed and stamped by a registered civil or traffic engineer.

By signing and stamping this HSIP application, the engineer is attesting to this application's technical information and engineering data upon which local agency's recommendations, conclusions, and decisions are made and upon which statewide funding will be determined, including:

1. All likely project costs associated with the project scope of work are included in the Total Project Cost;
2. Each countermeasure included represents a minimum of 15% of the construction costs and is applied consistently with Appendix B of the Local Roadway Safety Manual;
3. All crash data is: 1) accurately shown in collision diagram(s) and collision summary report(s) attached to this application; and 2) applied to countermeasures using generally accepted traffic engineering principles; and
4. When applicable, all traffic warrant studies have been prepared per the CA-MUTCD.

#### Registered Engineer:

#### Engineer's Stamp\*:

Name (Last, First):

Title:

Engineer License Number

Signature\*: \_\_\_\_\_

Date:

### Part B. Transportation Manager's Signature

To ensure the application's quality and the agency's commitment to deliver the safety project in an expedited manner, the application must be signed by the Agency's Transportation/Traffic Engineering Manager.

By signing this application, the manager is attesting to:

1. All data in the application is accurate and represents the total scope of the planned project;
2. The agency understands the Project Delivery Requirements for the HSIP Program and is prepared to deliver the project with these requirements; and
3. The agency understands if Caltrans staff determine that any of the above requirements are not met, or data is inaccurate, or the application fails to meet the program guidelines and application instructions, the application will be rejected and will not be eligible to receive federal safety funding. Due to time constraints in the evaluation process, applicants will not be notified until after the selection process is complete. Refer to Application Form Instructions for more information.

#### Transportation Manager:

Name (Last, First):

Title:

Signature\*: \_\_\_\_\_

Date:

\* Note: The signatures and the engineer's stamp are only expected on the two hard copies of the application. The electronic copy of this PDF form must be saved in the original format (NOT a scanned copy) so the application data can be extracted.